# Trends in Health Service Costs and Utilization

1995 – 2001

An Analysis of a Privately Insured Population in Maine

October 2005

Elizabeth Kilbreth
Erika Ziller
Susan Payne

This report was funded by grant P09OA00042-01-07 awarded to the Governor's Office of Health Policy and Finance, with a Cooperative Agreement with the Edmund S. Muskie School of Public Service.

The authors gratefully acknowledge the very helpful review and comments on earlier drafts of this report by Bill Perry and Karl Finison of the Maine Health Information Center and Gino Nalli of the Muskie School, Institute for Health Policy. This report was funded by the State Planning Grants Program of the Health Resources and Services Administration, grant # P09OA00042-01-07. The responsibility for the analyses and interpretations presented in this report rest with the authors, and the conclusions do not necessarily represent the views of the Maine Governor's Office of Health Policy and Finance, HRSA, the Maine Health Information Center, or the University of Southern Maine.

Institute for Health Policy, Muskie School of Public Service, University of Southern Maine
PO Box 9300, Portland, Maine, 04104-9300
www.muskie.usm.maine.ed

## EXECUTIVE SUMMARY

This report examines trends from 1995 through 2001 in health care costs and use of approximately 106,000 health plan beneficiaries from a subset of employers in the Maine Health Management Coalition (MHMC). The project was carried out by the Institute for Health Policy of the Muskie School with collaboration from the Maine Health Information Center (MHIC). The report shows changes in aggregate and sector-specific health care costs for the study population. Where possible, the experience of this privately insured group in Maine is compared with national experience of privately insured populations.

Among the key findings were the following:

Average (age adjusted) per capita costs in the study population rose from $128 per month in 1995 to $172 per month in 2001 – a 34 percent increase.

Among the most striking findings of this analysis is the contribution of hospital outpatient costs to overall cost growth rates. Outpatient hospital costs per person increased by 92 percent during the six years of the study. By 2001, the study population per- member-per-month costs for outpatient services were $57 compared to the national experience among "loosely managed" health plans of $36.

Inpatient acute care cost rose 20 percent over the six years of the study. Utilization declined in the study period – with 12 percent fewer hospital discharges per 1,000 people covered and 6 percent fewer patient days per 1,000. Average *charges* per inpatient episode rose 64 percent while the average *paid* rose 23 percent. Case-mix adjusted payments per episode of care rose 18 percent.

Compared to the national experience of privately insured persons, inpatient per capita costs for the Maine study population rose more rapidly over the six years of the study. National per capita inpatient care costs rose a total of five percent compared to 20 percent for the Maine study population.

During this same time period, the utilization, across all health care delivery settings, of various procedures frequently provided on an outpatient basis grew substantially in the study population. The rate of CAT scans per 1,000 increased by 143 percent and of MRIs by 149 percent. The rate of

colonoscopies increased 262 percent. A nationally conducted study published in 2003 found that Maine's capacity in terms of MRI units is among the highest in the country - 8 times the capacity in New Hampshire, for example.

The Maine study population experienced increases in both physician service utilization and cost per visit. The net effect of these increases was a 69 percent increase in per capita costs for physician visits across the study period. This increase compares with a 39 percent per capita increase for privately insured persons, nationwide. Physician visits are a component of professional services and costs for this category of services rose only by 31 percent during the study period. This may indicate that physician visits were substituted for other professional services during this time period. Despite the growth in PMPM costs for physician visits, professional services as a whole composed a smaller portion of total health care spending in 2001 (35 percent) than in 1996 (38 percent).

Discharges for ambulatory sensitive conditions in the Maine study population declined less rapidly than the overall discharge rate. While the overall discharge rate declined about 12 percent in the study period, the rate for ambulatory sensitive conditions declined 6 percent. While the number of actual discharges on a diagnosis-specific basis makes it difficult to discern meaningful trends, there were three conditions which showed substantial improvement. Hospitalizations for pediatric asthma declined by 59 percent, hospitalizations for uncontrolled diabetes among adults declined 80 percent, and hospitalizations for angina declined 55 percent. Similar large declines were seen across the entire Maine population suggesting generalized and positives changes in the management and treatment or the standards for hospital admissions for these diseases.

# TABLE OF CONTENTS

# INTRODUCTION

## Purpose

Maine's per capita health care spending rose more rapidly than any other state in the Nation during the 1990s.[1] As a consequence, by 2000, Maine was fifth among states in health care spending as a percent of the State's economy and 42nd in median household income.[2]

This study is part of an effort to document and explain the changes in aggregate health spending in Maine. As one piece of this effort, the Governor's Office of Health Policy and Finance contracted with the Institute for Health Policy of the Muskie School of Public Service to examine changes in the cost and utilization experiences for a segment of Maine's commercially insured population between the years 1995 and 2001.

The report relies on de-identified claims data from the health benefit plans of some of the employers participating in the Maine Health Management Coalition (MHMC), a consortium of about 40 Maine employers including public sector and private entities. Overall, the Maine Health Management Coalition employees and their dependents include about 200,000 Maine residents (approximately 25 percent of the privately insured population in the State). The analysis for this study is limited to member organizations that were part of the Coalition throughout the six year study period, from 1995 to 2001. This group encompasses about 106,000 health plan beneficiaries.

This study was conducted in collaboration with the Maine Health Information Center (MHIC), an independent, nonprofit, health data organization focused on providing healthcare data services to a wide range of clients in Maine and other states. The MHIC is the repository for claims data for the Maine Health Management Coalition and has worked closely with the Coalition, providing many reports to participating businesses over the years. In order to preserve the anonymity of Coalition employers and employees, the MHIC created the analytic files and conducted the preliminary analyses for this report, presenting researchers at the Institute for Health Policy with de-identified data aggregated across employers and benefit plans. The secondary analysis, conclusions, and presentation of findings in this report, however, are the

[1] Martin, Whittle, Levit, et al. (2002). Health Care Spending During 1991-1998: A Fifty-State Review. *Health Affairs* 21(4):114.
[2] Milbank Memorial Fund, National Association of State Budget Officers, and The Reforming States Group. 2000-2001 State Health Care Expenditure Report, Appendix Table A, Milbank Memorial Fund, Copyright 2003 . Available at http://www.milbank.org/reports/2000shcer/index.html.

authors' and do not necessarily reflect the views of the MHIC, the Maine Health Management Coalition, the University of Southern Maine, or the project funders.

This report was developed as part of the analytic work of the Maine State Planning Grant, funded by the Office of Special Programs of the Health Resources and Services Administration, U.S. Department of Health and Human Services. The HRSA State Planning Grant Program provides one-year grants to States to develop plans for providing access to affordable health insurance coverage to all citizens. The program requirements specify that each state awarded a grant will design an approach that ensures that every citizen has access to affordable benefits equal in scope to the Federal Employees Health Benefit Plan, to State Employees, to Medicaid recipients, or other similar health plans. Maine was awarded a grant in 2002, with supplemental grants in 2003 and 2004.

## Methods

The purpose of this report is to examine changes in health service utilization and costs over time. The data source for these analyses is paid claims. While we recognize that paid claims may not measure the true costs of the services to the providers, we use the term "costs" throughout the report to mean the negotiated payment for services received. Expenditures analyzed for this report encompass both employer and the employee share of covered benefit costs (including copayments, deductibles, and coinsurance) and capitation payments, so observed differences from year to year reflect changes in total cost, not changes attributable to benefit modifications. All covered benefits except prescription drug costs are included in the analysis. Pharmaceutical costs are excluded because the level of benefit coverage varies substantially from employer to employer and over time – meaning that measured changes in spending may reflect changes in level of coverage rather than changes in utilization or cost.

Our basic unit of analysis is average, per-person cost (expressed as the cost per member per month, or PMPM). We also look at changes in rates of use of health care services (for example, average physician visits per person) and changes in expenditures per service.

The data used to generate this report include benefit plan cost and utilization information for only those employer groups that participated in the MHMC continuously throughout the 1995-2001 timeframe. We did this to ensure consistency of measurement over time and to rule out the possibility that the observed changes in utilization and expenditures were related to changes in employer mix. Tracking a

stable cohort of employer plans ensures that the analysis minimizes the impact of changes in the population included in the study. Although some change in the mix due to retirements, job turnover, new hires, and employee decisions to drop or pick up benefit coverage is inevitable, these changes are likely to be less dramatic than changes associated with the introduction of an entirely new population associated with an employer group that joined the Coalition part way through the study.

Unless noted, all figures and tables are constructed from data files and tables constructed by the MHIC with some further analyses by the research staff at the Institute for Health Policy. Where possible, the MHMC trends reported here are compared to the average national experience for employer groups, privately insured persons, or other similar populations for the same period of time. Inpatient utilization trends are compared to the total U.S. population experience of similar age cohorts. In this instance, we use the total U.S. population as a base for comparison because we found no information on the experience of privately insured groups. Changes in per person cost for inpatient care, however, is compared to the experience of privately insured populations.

We report both charges and payments for hospital inpatient services. This is because actual payment rates by insurance companies and employers are negotiated with hospitals with discounts provided for factors such as prompt payment and volume. Payment rates differ substantially from hospitals' stated charge rates. We also report on the difference in growth in case-mix adjusted payments compared to non-adjusted payments using measures of diagnosis-related relative costliness generated by the Centers for Medicare and Medicaid Services (CMS). Outpatient expenditures are allocated as outpatient services billed by a hospital, professional services, or other facility services, such as a free-standing ambulatory surgical center. We trend changes in outpatient spending based on average per member per month costs. Changes in utilization for outpatient services cannot be tracked in aggregate, because there is no uniform unit of measure across the services. Instead, a report is provided of changes in utilization for selected tests and procedures – some of which may include both outpatient and inpatient services.

Professional services are presented in two ways. First, changes in expenditures for aggregate professional services on a per member per month basis are reported. Second, physician visits are trended both in terms of changes in utilization rates and costs per visit.

## Study Limitations

Our ability to track changes in price per unit of service and pharmaceutical expenditures is limited by the data available to us. Due to the descriptive nature of the report, we do not offer statistical measures for determining whether these changes may reflect chance fluctuations rather than systematic differences. However, consistent trend lines (as opposed to fluctuations) and the magnitude of many of the differences, particularly when comparing 2001 to 1995, make it unlikely that chance is responsible for the observed changes.

Although the size of the sample would suggest that the MHMC data used for the report are representative of the State's privately insured population, the fact that the MHMC is a self-selected group may make its experience different from that of other privately insured groups in Maine in unknown ways.

## Organization of Report Findings

The report is organized so that summary information is presented first. Aggregate changes in cost and utilization across the six-year study period are presented. We then present changes in the composition of the covered population according to age and sex and discuss the relationship of demographics to changes in aggregate cost trends. The second part of the findings section of this report examines the experience with different sectors of the health care system: hospitals, physician services, outpatient, and non-hospital-based services. Finally, we present findings with regard to special categories of services that provide some insight into the quality of care in Maine.

## AGGREGATE FINDINGS

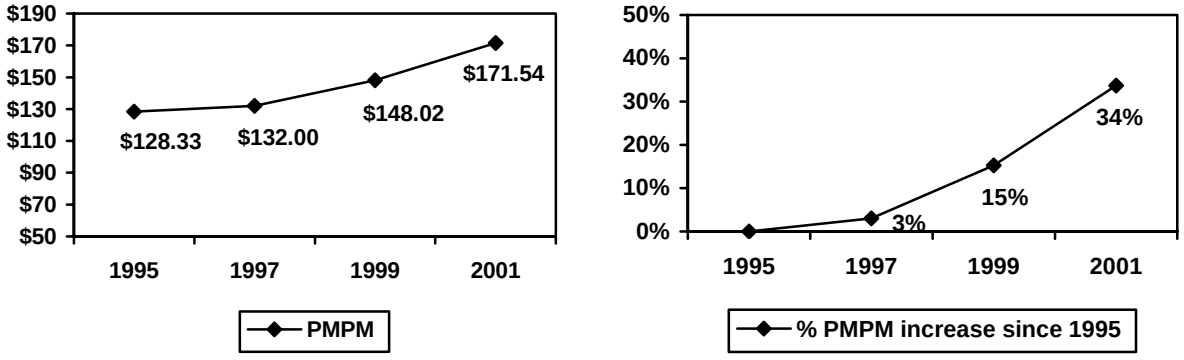
This report uses, as a standardized measure, the average monthly cost per enrollee expressed as the "per member per month" or PMPM cost. This measure is useful in tracking changes in cost over time because it allows an assessment in changes unaffected by growth (or decline) in enrollment.

### Trends in Total PMPM Costs 1995 through 2001

Between 1995 and 2001, the per member per month (PMPM) claim costs for covered benefits excluding pharmaceuticals, for the MHMC employers included in the study increased from approximately $128 to $181 or 41 percent (shown in Table 2, page 11). Using standard actuarial practices, these data were adjusted to account for aging of the covered population and the adjusted costs are presented in Figure 1.

Over the six year time-period, the age-adjusted increase in PMPM claim costs was approximately $45 ($172 versus $128). As shown in Figure 1, this represents a 34 percent increase in PMPM costs between 1995 and 2001. (Note that this figure presents cumulative increases not individual annual increases.)

**Figure 1: Age-Adjusted Per Member per Month Costs, 1995-2001**
(In Raw Dollars and as a Cumulative Percentage Increase over 1995)



A comparison of the MHMC *total* cost experience with national experience is not possible because of lack of comparable national data. As discussed above, the MHMC costs analyzed in this study exclude pharmaceutical costs. Aggregate national spending data for privately insured persons include pharmaceutical costs. Nationally (and in Maine), increased prescription drug spending contributed substantially to increases in overall health care spending in the period under study. For example, for all persons in the United States, personal health care spending for prescription drugs increased by 15 percent between 2001 and 2002, compared to an overall growth rate in personal health care spending of 9 percent.[3] Later sections in the report compare MHMC cost trends of specific sectors (inpatient, outpatient, and physician visits) with national data.

[3] Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Statistics Group, *Health Care Financing Review Statistical Supplement, 2003:* 104.

## Demographic Changes

Sex and age are characteristics that can predict health care use. In order to understand what effect these traits may be having on our findings, we examined changes in the enrolled population over the six-year time span of the study (Table 1).

Between 1995 and 2001, the proportion of covered lives that were female did not change. However, there was a change in age mix in the enrolled population. In 1995, adults between the ages of 45-64 accounted for 27 percent of the total population; this proportion increased to 34 percent in 2001. For all other age groups, the proportions remained the same or declined by 3 percent or less between 1995 and 2001.

**Table 1: Gender and Age of Enrolled Population, 1995-2001**

| | Number of Eligibles (Average Number Enrolled Each Month) | | | |
|---|---|---|---|---|
| | 1995 | 1997 | 1999 | 2001 |
| Total | 106,601 | 102,136 | 104,213 | 107,278 |
| Sex | | | | |
| Male | 49% | 49% | 49% | 49% |
| Female | 51% | 51% | 51% | 51% |
| Age Group | Percent Distribution by Age | | | |
| 0 | 1 | 1 | 1 | 1 |
| 1-4 | 5 | 5 | 5 | 4 |
| 5-17 | 23 | 22 | 22 | 21 |
| 18-34 | 23 | 21 | 21 | 20 |
| 35-44 | 21 | 21 | 20 | 20 |
| 45-54 | 16 | 18 | 19 | 21 |
| 55-64 | 9 | 10 | 11 | 11 |
| 65-84 | 2 | 2 | 1 | 2 |
| 85+ | Less than 1% Each Year | | | |

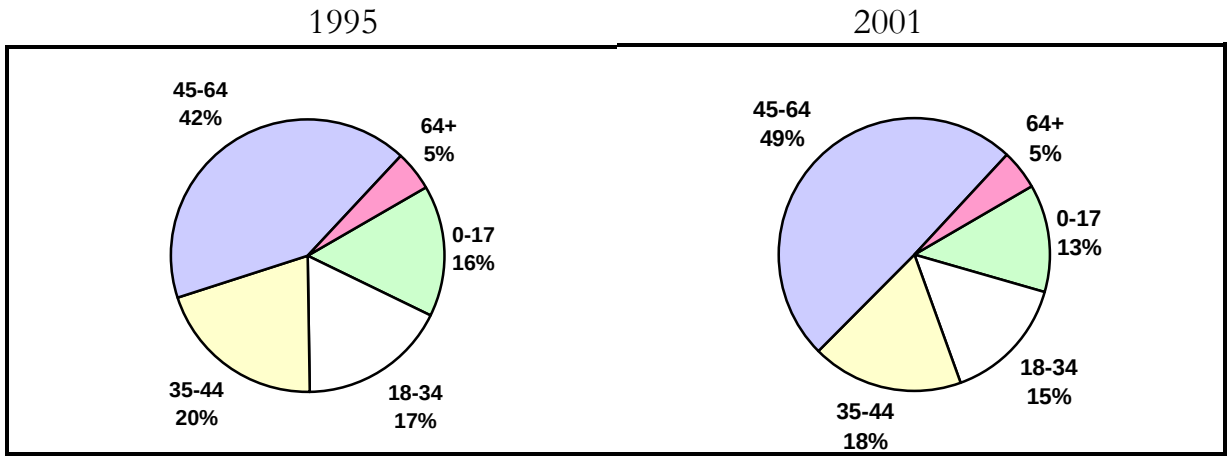
During the study time frame, the rate of spending per person changed at different rates for different age groups (Table 2). Overall, the average cost per member per month for the study population increased 41 percent between 1995 and 2001. The rate of increase was higher for infants (62 percent). However, per capita costs for children between the ages of 1 and 18 grew substantially slower than costs for adults (10 percent increase). For adults between the ages of 45 and 54 costs increased at close to the same rate as the overall population (40 percent versus 41 percent). For all other age groups, the age-specific rate of increase was lower than the overall average. These differential growth rates affect the contribution of each age cohort to total costs over time. While the average PMPM cost of an infant in this study population was 2.25 times higher than the aggregate population average in 1995, this differential rose to 2.58 times the aggregate rate by 2001. Conversely, all other age-specific cost rates declined in relation to the aggregate rate in 2001 (see Table 2). Nevertheless, the PMPM rate for adults between the ages of 45 and 54 remains almost 30 percent higher than the aggregate PMPM, and the rates for adults between the ages of 55 and 84 are more than double the aggregate rate.

**Table 2: Age-Specific Changes in Average Per Member Per Month Spending, 1995 - 2001**

| Age | Increase in PMPM 1995 – 2001 Percent Change | Age-Specific PMPM in Relation to Average 1995 | Age-Specific PMPM In Relation to Average 2001 |
|---|---|---|---|
| 0 | 62 % | 2.25 | 2.58 |
| 1 – 4 | 10 | 0.53 | 0.41 |
| 5 – 17 | 28 | 0.45 | 0.41 |
| 18 – 34 | 39 | 0.77 | 0.76 |
| 35 – 44 | 34 | 0.95 | 0.91 |
| 45 – 54 | 40 | 1.28 | 1.27 |
| 55 – 64 | 26 | 2.27 | 2.02 |
| 65 – 84 | 30 | 2.71 | 2.50 |
| 85+ | Insufficient Data | | |
| Total Population | 41% | 1.00 | 1.00 |

Figure 2 shows the net effect of the aging of the enrolled population and the differential changes in the rate of spending by age cohorts. In 1995, those in the 45-64 age group account for 42 percent of all costs. This proportion increased to 49 percent in 2001. The lower growth rate of costs among children more than offset the higher rate of infants, so that the percent of expenditures by those below age 18 declined from 16 percent to 13 percent of total costs. Those above age 64 contributed 5 percent of costs in both time periods. The proportion of costs attributable to young adults declined slightly.

**Figure 2: Percent of Expenditures by Age Group**

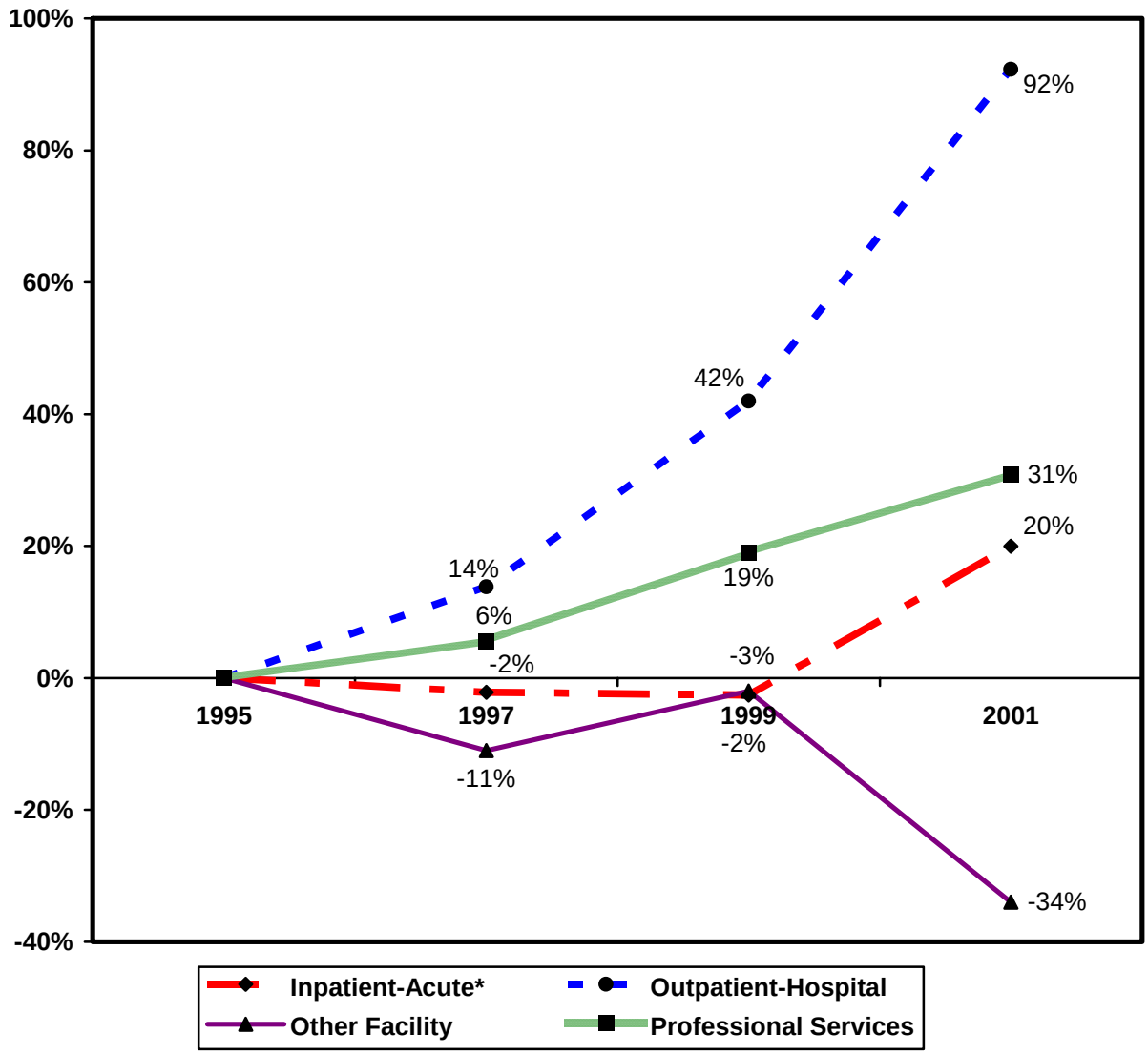


## Trends by Category of Health Care Service

While age-adjusted PMPM costs across all categories of covered services (exclusive of pharmaceutical costs) increased 34 percent between 1995 and 2001, the percent increase differs dramatically for specific services. Figure 3 depicts the cumulative six-year change in PMPM costs for select categories of service: acute-care inpatient, hospital outpatient, professional services, and other facility services. Hospital outpatient includes any outpatient service billed by a hospital. Professional services encompass physician services and other health care professionals such as physical therapists, psychologists, and nurse practitioners. "Other facility" service includes non-professional services (tests, procedures, etc.) billed by non-hospital facilities such as Ambulatory Surgical Centers, rehabilitation facilities, rural health centers, skilled nursing facilities, and others.

Hospital outpatient services rose at the most rapid rate during the study period, increasing 92 percent in per person cost over the six years. General acute care inpatient PMPM costs increased 20 percent and professional services increase 31 percent. The PMPM costs of other facility services declined by 34 percent. This category represents a very small proportion of total costs.

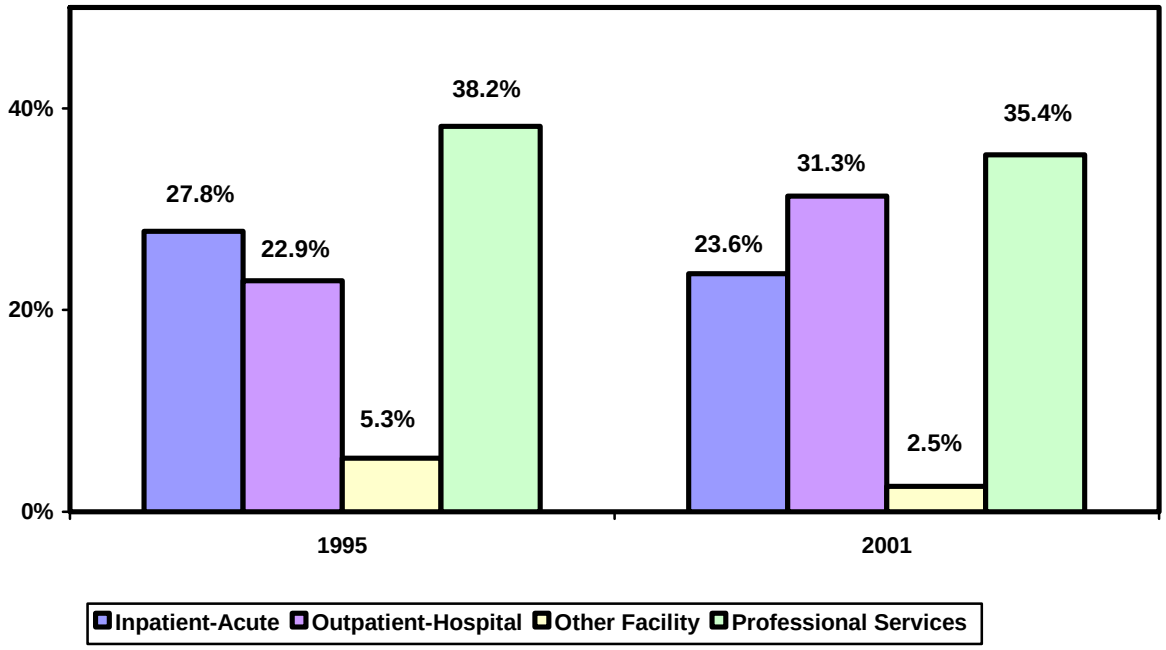
Figure 3: Cumulative Percent Increases in Per Member per Month Costs by Category of Service, 1995 – 2001




*Excludes specialty hospitals: Acadia, Spring Harbor, New England Rehabilitation.

The near-doubling in PMPM costs for hospital outpatient services resulted in a change in the proportional contribution of different categories of service to total expenditures between 1995 and 2001 (Figure 4). For example, professional services as a percent of total costs fell from 38 percent to 35 percent – despite the rate of increase in PMPM costs. Hospital outpatient service costs for MHMC members increased from 23 percent to 31 percent of total costs.

**Figure 4: Change in Category of Service as a Proportion of Total Expenses (1995-2001)***




Note: Data for pharmacy claims not available. Totals do not equal 100% for each year due to exclusion of "other" and "unknown" categories of service.

## Inpatient Services

Inpatient and outpatient hospital costs can increase due to one of three factors, or a combination of any of the three. First, the total number of services provided (health care utilization) can rise, either as a result of an increase in the number of patients or as an increase in the average number of services received by each patient. Second, the intensity of the care received by patients can increase because the average patient is sicker, requiring more sophisticated treatment and care. This factor is measured by the relative case-mix index. Third, the cost per service can increase either because new, more costly technologies are substituted for older technologies or as a result of general medical inflation. In the sections, below, we try to evaluate the factors contributing to the aggregate cost increases among MHMC beneficiaries, and to compare trends for this covered group in Maine, to national trends. We do not have information on the average "price" per unit of service or on changes in technology, so cannot report these trends directly. However, we can separate costs per discharge into case-mix related changes and non-case-mix related changes. The non-case-mix change is a proxy measure for price and intensity related costs.[4]

### *Utilization*

As indicated in Table 3, the number and rate of hospital inpatient stays decreased between 1995 and 1999—from a rate of 70 down to 61 discharges per 1000 population. Between 1999 and 2001, the hospital discharge rate increased slightly but did not reach earlier levels. During the entire study period, the Maine study population rates are substantially below national averages for the same time period for adults between the ages of 15 and 64. Nationally, in 2001, the rate of discharge for young adults (ages 15 through 44) was 83.8 per 1,000 and for older working adults (ages 45 through 64), the rate was 112 per 1,000.[5] Further, while the use rate (discharges per 1,000) among the Maine study population beneficiaries declined overall, dropping a total of almost 13 percent, the national trend saw a more modest decline between 1995 and 2000. Like the rates for the MHMC population, the national rates increased slightly in 2001, but remained below the 1995 rates.

[4] Some minor distortion in the measurement of inpatient costs may have occurred because of hospitals billing for services such as physician office visits. Because claims data is derived from the billing provider, some costs that are actually professional services may be reflected in the reported inpatient costs. If this billing practice increased over the period of the study, it would result in some over-estimation of inpatient increases and under-estimation in physician service increases.

[5] National Hospital Discharge Survey, 2001, National Center for Health Statistics, p.8. Rates calculated using the U.S. Census Bureau estimates of the civilian population. No source was found for inpatient utilization among working populations during the time period of the study.

Total population measures, such as those reported above, can be expected to differ substantially from the experience of an employer-based enrollment group like the study population because the general population includes uninsured and disabled persons and other groups that differ substantially in health and socio-demographic characteristics from working populations and their families. These general population trends are reported to show that the general direction of inpatient utilization trends in the study population were part of a generalized phenomenon experienced nationally.

During this time, the average length of stay per discharge for the MHMC population increased from 3.9 days to 4.2 days. This increase in stay could reflect a greater severity of illness, as indicated by an increase in the case-mix index, which increased by 18.7 percent from 1995 to 2001. The MHMC length of stay parallels the national experience where, in 2001, average length of stay among young adults was 3.7 and among older working adults was 5.0.

The net effect in the MHMC population of declining admissions and longer stays is a modest decline of about 6 percent in the number of hospital inpatient days per 1,000 population. There was a steady decline in patient days per 1,000 between 1995 and 1999 (a 12.5 percent drop), and an increase in 2001, bringing the rate back to the 1997 level, but still below the 1995 level.

**Table 3: Changes in Inpatient Services, Charges and Payments 1995-2001**

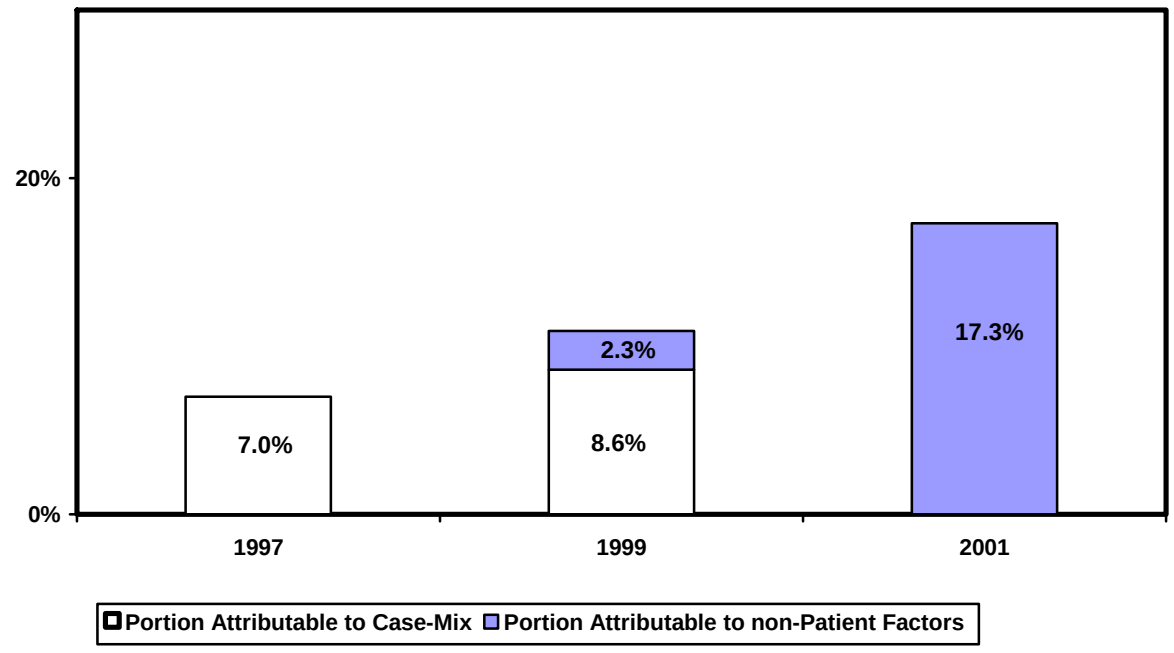
| | Year | | | | Percent Change |
|---|---|---|---|---|---|
| | **1995** | **1997** | **1999** | **2001** | **1995-2001** |
| Discharges | 7,473 | 6,743 | 6,093 | 6,573 | -12.0% |
| Discharge Rate/1000 | 70.1 | 66.0 | 58.5 | 61.3 | -12.6 |
| Patient Days | 29,233 | 26,550 | 24,667 | 27,667 | -5.4 |
| Average Length of Stay | 3.9 | 3.9 | 4.0 | 4.2 | 7.7 |
| Patient Days/1000 | 274 | 260 | 237 | 258 | -5.8 |
| Case-Mix (HCFA) | 0.95 | 1.06 | 1.15 | 1.13 | 18.7 |
| Total Charges | $48,935,396 | $49,990,011 | $54,247,366 | $70,403,838 | 43.9 |
| Average Charge | $6,548 | $7,414 | $8,903 | $10,711 | 63.6 |
| Total Paid | $45,609,354 | $44,159,481 | $44,259,315 | $55,997,808 | 22.8 |
| Average Paid per discharge | $6,103 | $6,549 | $7,264 | $8,519 | 39.6 |
| Case-mix adjusted Average Paid | $6,402 | $6,177 | $6,320 | $7,526 | 17.6 |

*Cost Per Service*

The average cost per discharge for hospital inpatient care increased between 1995 and 2001 by 40 percent. When adjusted for the increased acuity of case-mix, the cumulative increase is 18 percent (Table 3). The case-mix adjustment controls for changes in how acutely ill patients are and differences in the intensity of their treatment needs. The case-mix adjusted changes in average costs indicate the rate of increase that would have occurred if the same mix of patients received services year after year. Thus, the change in the case-mix adjusted rate measures factors other than patient acuity that contribute to rate increases such as general inflation and costs associated with replacement and new technology. The unadjusted rate of increase shows the combined effect of changes in patient acuity and other contributions to cost increases.

Figure 5, below, shows biennial percent increases in total average cost per patient discharge over the study period and the proportion of the increase attributable to changes in case mix. Between 1995 and 1997, all of the increase in cost per patient discharge can be attributed to changes in case mix. In fact, hospitals received slightly less per level of acuity, in 1997 than in 1995, because the case-mix adjusted

**Figure 5: Contribution of Change in Case-Mix and Non-Patient Factors to Increase in Cost per Discharge**



reimbursement rate actually declined by 3.5 percent. Between 1997 and 1999, actual payments increased by almost 11 percent while the case-mix adjusted payments rose by 2.3 percent. During this time period, these data indicate that about four-fifths of the overall increase was associated with an increase in the acuity of patients, and one-fifth with general medical inflation or other non-patient-related factors. Between 1999 and 2001, the total increase in average per patient payments was 17.3 percent, all of which can be attributed to non-case-mix related factors.

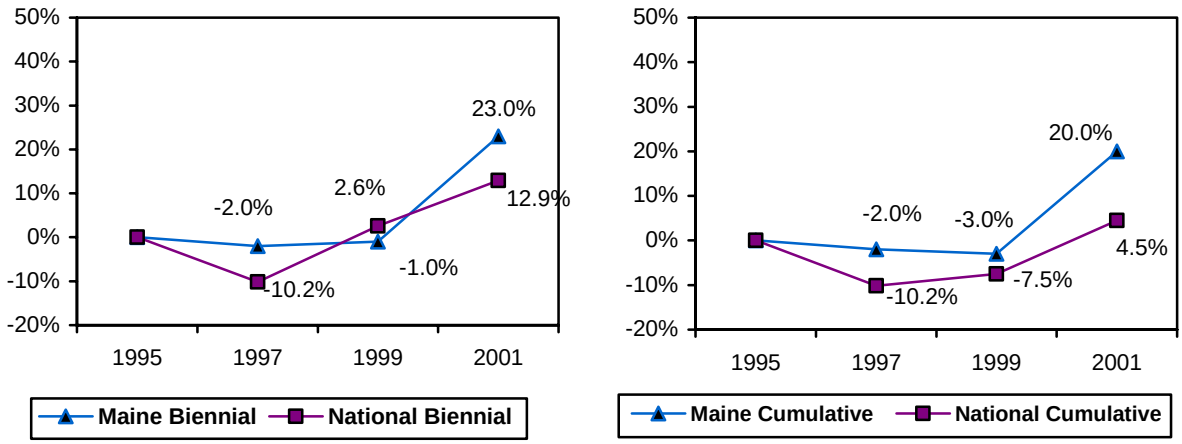
### *MHMC Hospital Inpatient Experience Compared to National Private Insurance Experience*

The MHMC experience with inpatient cost increases between 1995 and 2001 differed markedly from the experience of private insurers nationwide (Figure 6). Based on data from the Milliman USA Health Cost Index, private insurer hospital costs on a per capita basis declined 10 percent between 1995 and 1997, stayed flat in 1998, rose less than 3 percent in 1999, and rose about 13 percent between 1999 and 2001. Using 1995 as a base year, this drop and subsequent increase put per capita costs only 5 percent higher in 2001 than they had been in 1995.[6] These costs, derived from both publicly available and proprietary data, are based upon a $0 deductible policy[7] to control for the effect of increased employee cost sharing in measuring expenditures. In this respect, the measurements are comparable to the MHMC costs used for this study, which include both employer and employee costs associated with hospital expenditures. During this same time period, the MHMC employers included in this study saw much smaller decreases in the mid-'90s and steeper rises at the end of the decade. As a consequence, their per capita inpatient costs were 20 percent higher in 2001 compared to 1995.

[6] Strunk B, Ginsburg, P. and Cookson, J. Tracking Health Care Costs: Declining Growth Trend Pauses in 2004. *Health Affairs – Web Exclusive*, 21 June: W5 – 288.

[7] Adjustments are made to the data to reflect a $0 deductible policy in order to control for changes in benefits and increases in cost sharing. Changes in utilization, however, reflect actual employer plan experience inclusive of employee cost sharing. Utilization is thus lower than would be the case if only actual $0 deductible policies were used to calculate average costs.

**Figure 6: Biennial and Cumulative Changes in Inpatient Per Capita Costs, 1995-2001**



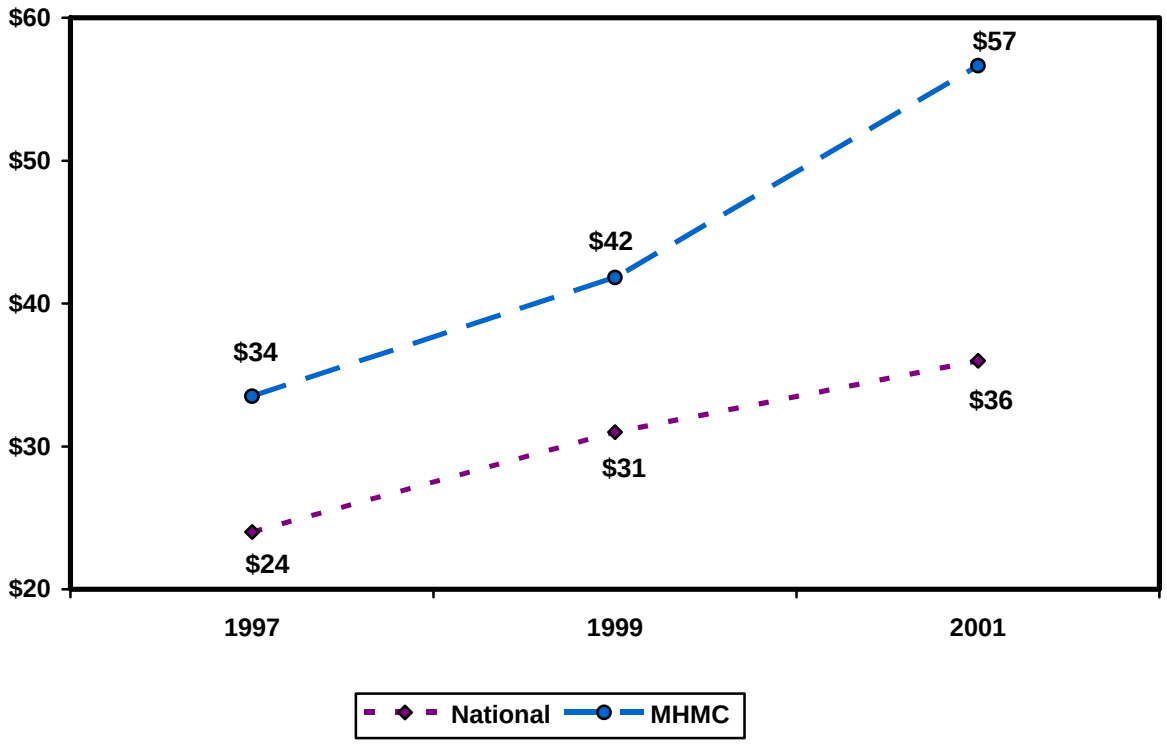

*Excludes specialty hospitals: Acadia, Spring Harbor, New England Rehabilitation.

## Hospital Outpatient Services

Figure 7 compares the MHMC increases in PMPM for outpatient services to the average experience of "loosely managed" commercial health plans nationally. The national data are excerpted from a report by Milliman-USA.[8] Like the MHMC experience, the Milliman report demonstrates that national hospital outpatient PMPM costs increased substantially between 1997 and 2001, from $24 to $36. However, this increase of 50 percent over three years remains less than the MHMC increase of 68 percent over the same time frame. Thus, for MHMC employers, the PMPM costs for hospital outpatient rose faster than the national average during this time period.

[8] Pyenson, BS, Zenner, PA, Chye, P. (2002). *Silver Bullets for Outpatient Cost Increases?* Milliman-USA, May 2002: p. 4.

**Figure 7: Estimated National Average Commercial Plan PMPM for Hospital Outpatient Services, Compared to MHMC Experience, 1997 - 2001**




Source for National Data: Milliman Health Cost Guidelines, as cited in, Pyenson, BS, Zenner, PA, Chye, P. (2002). *Silver Bullets for Outpatient Cost Increases?* Milliman, May 2002: p. 4. Data were extrapolated from a bar chart so dollar amounts are approximate.

The Milliman report notes that the national increase in outpatient costs reflects in part a concerted effort on the part of health plans to move care from the inpatient to the outpatient arena. The Milliman report also discusses additional drivers of increasing outpatient costs, identifying the move to newer, more expensive procedures as a principal force behind these increases. As an example, the authors cite the move from x-rays to CT scans, and from CT scans to MRIs. These national trends were most likely present in Maine, but we cannot, with the data available, account for the difference in the trend rate between national experience and the Maine study population experience.

## Procedure Trends

Figure 3 (page 11) shows that average per person costs for outpatient services in the MHMC population rose faster than any other type of health service studied in this analysis and Figure 7 shows that these costs rose faster in Maine than the national experience. Unfortunately, with outpatient costs we cannot, in the aggregate, look at the portion of the increase that is attributable to utilization increases or the portion that is attributable to price increases. This is because there is no standardized unit, such as a day of hospitalization, that can be used to monitor change in price and service use over time. Outpatient services are a composite of a wide variety of services, ranging from surgeries that do not require an overnight stay, to well child visits carried out in hospital clinics, to x-rays and other diagnostic tests.

While it is not possible in this study[9] to measure change in the aggregate of outpatient services except in terms of dollars spent, it is possible to look at the change in utilization for specific frequently-used procedures to assess changes in medical care practice patterns and to observe some of the procedures that are likely contributing to increases in outpatient spending. Table 4 presents the change in use rates of different procedures from 1995-2001 for the MHMC study population. These procedures *are not limited to hospital outpatient departments*, but cut across all settings, including physician offices, ambulatory surgical centers, nursing facilities and health centers.[10]

In 1995, the most frequent procedures among those included in this analysis were skeletal x-rays, which were provided, on average, at a rate of 176 per 1000 covered persons. In 2001, skeletal x-rays were still the most frequent procedure, provided at a rate of 263 per 1000 lives – a 50 percent increase. In 1995, the only other procedure that occurred at a rate greater than 100 per 1000 covered individuals was the chest x-ray. This procedure saw a somewhat smaller rate of increase of 23 percent over the study period. By 2001, there were 4 additional individual procedures being provided at a rate that exceeds 100 per 1000 covered persons including: other types of x-ray and imaging tests and EKGs and other cardiac tests. The greatest percent increase in utilization was for colonoscopies, which rose in rate of frequency 262 percent. Other procedures that saw very substantial rate increases were CT scans (143 percent) and MRIs (149 percent).

[9] The development of relative value unit (RVU) methodology offers promise and future opportunities to standardize measurement of outpatient utilization.

[10] The selected categories of service reported here were developed by the Maine Health Information Center using the Berenson-Eggers Type of Service (BETOS) codes – a system developed originally for analyzing Medicare expenditures. More information about BETOS codes is available at www.cms.hhs.gov/data/betos/default.asp.

**Table 4: MHMC Rates for Selected Procedures, 1995 -2001**

| Procedure Rates per 1000 Covered Persons: | 1995 | 1997 | 1999 | 2001 | % Change 1995 - 2001 |
|---|---|---|---|---|---|
| Standard Imaging - Chest | 109.0 | 111.6 | 130.3 | 133.9 | 23% |
| Standard Imaging - Skeletal | 176.0 | 202.7 | 240.8 | 263.3 | 50% |
| Standard Imaging - Breast | 93.1 | 114.6 | 141.0 | 153.8 | 65% |
| Standard Imaging - Other | 95.0 | 99.6 | 111.4 | 103.1 | 9% |
| CAT Scan | 28.7 | 38.7 | 51.7 | 69.8 | 143% |
| MRI | 18.7 | 24.1 | 36.6 | 46.6 | 149% |
| Cardiac Imaging | 17.1 | 21.0 | 22.9 | 25.9 | 52% |
| Other Imaging | 93.4 | 105.5 | 135.1 | 157.6 | 69% |
| EKG, Treadmill, Other Cardiac Testing | 94.4 | 110.8 | 122.3 | 139.4 | 48% |
| Endoscopy - Arthroscopy | 4.0 | 5.3 | 6.4 | 6.4 | 59% |
| Endoscopy - Upper Gastrointestinal | 8.2 | 9.4 | 11.5 | 14.1 | 72% |
| Endoscopy - Sigmoidoscopy | 7.5 | 9.8 | 12.7 | 11.3 | 52% |
| Endoscopy - Colonoscopy | 8.1 | 11.7 | 16.9 | 29.2 | 262% |
| Major Procedures | 45.8 | 48.7 | 54.1 | 53.2 | 16% |
| Ambulatory Procedures | 74.8 | 79.0 | 107.2 | 126.2 | 69% |
| Minor Procedures | 114.5 | 128.4 | 143.9 | 163.4 | 43% |
| Maternity Care and Delivery | 27.6 | 25.6 | 28.4 | 27.0 | -2% |

The service and procedure-specific rate changes seem to tell a complicated story regarding changes in patterns of health service use. Breast imaging, EKGs and treadmill tests, and colonoscopies are all screening tests where some of the measured increase in utilization over the period studied may reflect positive improvements in preventive care but, with these data, it is not possible to distinguish appropriate increases in preventive services from utilization may be unnecessary or inappropriate.

The increase in CT scans and MRI use has occurred nationally. However, the increase in Maine may be above average. A recent analysis across all states shows that the number of freestanding MRI units in Maine increased 1200 percent between 1999 and 2001 – an increase greater than any other state in the Union.[11] Maine, with 26 such units, has one unit per 49,000 residents. By comparison, New Hampshire, with 3 free

[11] Baker, L. Birnbaum, H., Geppert, J., et al (2003)., The Relationship Between Technology Availability and Health Care Spending. Prepared for Blue Cross and Blue Shield Association. Chicago, IL: 37.

standing units, has one for every 421,000 residents. Vermont has none. Massachusetts with 43, has one for every 149,000 residents. The states deemed by the State Planning Office as most similar to Maine in demographic and economic characteristics (in addition to Vermont) are Wyoming, North Dakota and West Virginia. West Virginia and Wyoming each have about half the capacity of Maine on this measure, with about one free standing unit per 98,000 residents. North Dakota has one unit per 313,000 residents. The authors of the study examined the relationship between availability and use of imaging technology, and based on regression analyses of all fifty states found that greater availability is associated with higher utilization and spending.[12] Specifically, each increase of one MRI unit per 1 million people results in an increase of approximately $395,000 per million beneficiaries, per year. Second, the authors reviewed their data to determine whether new technologies substituted for older ones. They looked, for example, to see if an increase in MRI availability decreased the utilization of CAT imaging. Again, using multivariate analyses, they found no evidence of a substitution effect and, in fact, found an increase in use for CAT scans along with increased use of MRIs.

### Physician Visits

Table 5 shows changes in the provider type, use rates, and charges for office-based physician visits between 1995 and 2001. The total utilization rate for office-based visits increased about 24 percent, from 2,585 per 1000 covered lives (about 2.6 visits per person per year) to 3,205 per 1000 (3.2 visits per person per year). This compares to a 29 percent national increase in physician office visits by privately insured patients during the same time period.[13] During the same time period, the average expenditure per visit increased 36 percent, from $54 per visit to $74 per visit. The cumulative effect of an increased use rate and increase in cost was an increase of 69 percent in average PMPM costs for physician services.

[12] Baker, Birnbaum, et al., page 15-23. The authors incorporated hospital-based MRI's into their analyses.
[13] Cunningham P and May J (2003). Insured Americans Drive Surge in Emergency Department Visits. Center for Studying Health Systems Change Issue Brief No. 70: 2.

## Table 5: MHMC Office-based Physician Visits, 1995-2001

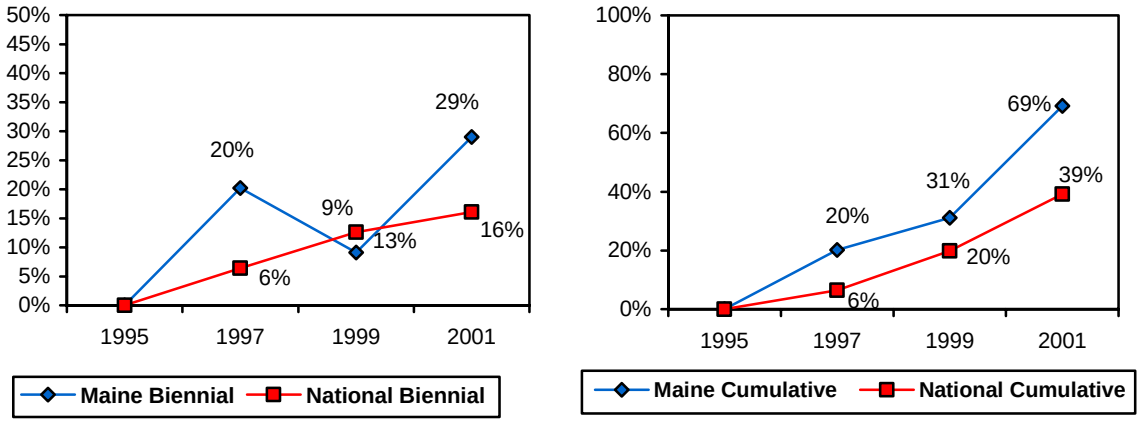
| | 1995 | 1997 | 1999 | 2001 | % Change 1995 - 2001 |
|---|---|---|---|---|---|
| Total Visits | 275,516 | 292,609 | 306,022 | 343,878 | |
| Total Visit Rate/1000 | 2,585 | 2,865 | 2,937 | 3,206 | 24% |
| Total Paid | $14,949,383 | $17,217,515 | 19,163,795 | 25,449,554 | |
| Average Paid per Visit | $54 | $59 | $63 | $74 | 36% |
| PMPM Cost | $11.69 | $14.05 | $15.32 | $19.77 | 69% |
| | | | | | |
| Primary Care Visits | 206,732 | 218,424 | 229,489 | 252,701 | |
| PC Visit Rate/1000 | 1,939 | 2,139 | 2,202 | 2,356 | 21% |
| Total Paid | $10,661,940 | $12,295,082 | $13,815,616 | $18,362,441 | |
| Average Paid per Visit | $52 | $56 | $60 | $73 | 41% |
| PMPM Cost | $8.33 | $10.03 | $11.05 | $14.26 | 71% |
| | | | | | |
| Specialist Care Visits | 61,540 | 67,006 | 70,024 | 79,826 | |
| SP Visit Rate/1000 | 577 | 656 | 672 | 744 | 29% |
| Total Paid | $ 3,794,773 | $ 4,436,922 | $ 4,889,617 | $ 6,187,451 | |
| Average Paid per Visit | $62 | $66 | $70 | $78 | 26% |
| PMPM Cost | $2.97 | $3.62 | $3.91 | $4.81 | 62% |
| | | | | | |
| Mixed Physician Visits | 3,329 | 2,815 | 2,199 | 9,376 | |
| Mixed Visit Rate/1000 | 31 | 28 | 21 | 87 | 180% |
| Total Paid | $ 215,484 | $ 184,912 | $ 153,506 | $ 724,014 | |
| Average Paid per Visit | $65 | $66 | $70 | $77 | 19% |
| | | | | | |
| Clinic Visits | 2,471 | 1,876 | 1,403 | 1,301 | |
| Clinic Visit Rate/1000 | 23 | 18 | 14 | 12 | -48% |
| Total Paid | $ 143,771 | $ 112,981 | $ 84,578 | $ 102,156 | |
| Average Paid per Visit | $58 | $60 | $60 | $79 | 35% |

The change in volume and charges between 1995 and 2001 differed across provider types. For example, the rate of primary care provider visits increased roughly 21 percent, while the rate of specialty care visits increased 29 percent. Conversely, average primary care visit costs increased at a higher rate than average specialty care visit payments (a 41 percent versus 26 percent increase over the five-year time period). The net effect of changes in volume and charges among specialty care providers was a 62 percent increase in PMPM costs, compared to an 71 percent increase for primary care visits. The proportion of total office-based physician visit costs that occurred in a primary care setting remained essentially unchanged (71 percent in 1995 versus 72 percent in 2001) largely because of two factors: 1) primary care visits account for so much larger a proportion of total visits, and 2) the differential rates of increase in volume and charges netted out to similar aggregate rates of increase for primary care and specialty care visits.

Physician visits are a component of professional services, and costs for this category of services rose only by 31 percent during the study period. This may indicate that physician visits were substituted for other professional services during this time period. Despite the growth in PMPM costs for physician visits, professional services as a whole composed a smaller portion of total health care spending in 2001 (35 percent) than in 1996 (38 percent) (see *Figure 4).*

**Figure 8: Biennial and Cumulative Changes in Physician Costs, MHMC and National**

**1995-2001**




*MHMC Per Capita Physician Cost Increases Compared to National Private Insurance Experience*

Maine per capita costs for physician services increased over the study time period at a much more rapid rate than did per capita costs for private insurers, nationally. Figure 8 shows that Maine costs rose more steeply than national costs in the 1995 to 1997 period, rose at a slightly lower rate than nationally, between 1997 and 1999, then, again, climbed more steeply through 2001. The cumulative effect of these changes over the six year period is that Maine per capita costs were 69 percent higher in 2001 than in 1995, compared to a cumulative increase nationally of 39 percent (Figure 10).

## Ambulatory Sensitive Conditions

"Ambulatory sensitive conditions" refer to hospital discharges for health care problems that generally do not require treatment if a patient obtains timely and medically appropriate ambulatory care. This set of diagnoses (including complications from asthma, diabetes, hypertension and urinary tract infections) is often used as an indicator of access to medical care and/or the quality of primary care services.

In the Maine Health Management Coalition, the number of hospital discharges for ambulatory sensitive conditions declined slightly between 1995 and 2001, from 5.5 per 1000 covered lives to 5.1 per 1000 – a 6 percent decline, in a period when their overall hospital discharges dropped by 12.6 percent. During this same period, for the State of Maine as a whole both total discharges and ambulatory sensitive discharges rose by between 2 and 3 percent. These data indicate that the change in the rate of ambulatory sensitive condition discharges may be an artifact of the general trends in inpatient care. A review of trends by specific diagnoses (Table 6) shows interesting and encouraging developments with regard to particular health conditions.

Table 6 shows the changes in the rate of specific ambulatory sensitive conditions over the study period. When looked at individually, most diagnoses are too infrequent to determine whether changes are random or reflect a trend. For example, in the MHMC population, inpatient stays for short term complications of diabetes occur among one in 10,000 covered individuals. When, over the course of a year, you expect to see only 10 admissions in a population of 100,000, an increase or decrease of a single admission can seem like a large change, but may reflect no more than random variation.

Three conditions, however, stand out as having consistent and sharp declines. The rate of hospital discharges for pediatric asthma dropped by close to 60 percent, for angina, by 55 percent, and for uncontrolled adult diabetes by 80 percent. These changes within the MHMC population are mirrored in the total Maine population, indicating generalized and positive changes in management and treatment and/or in the standards for recommending hospitalizations of these diseases.

Table 6: Rates of Discharge for Ambulatory Sensitive Conditions, 1995-2001

| Ambulatory Care Sensitive Conditions | Discharge Rate/1000 (except as noted) | | | | Percent Change | |
|---|---|---|---|---|---|---|
| | 1995 | 1997 | 1999 | 2001 | MHMC | Maine Total* |
| Total Discharges | 70.10 | 66.02 | 58.47 | 61.27 | -12.6% | +2.4% |
| All Ambulatory Care Sensitive Conditions | 5.46 | 5.52 | 5.25 | 5.12 | -6.2% | +2.7% |
| Diabetes Short Term Complication, Age 18+ | 0.10 | 0.12 | 0.11 | 0.15 | | |
| Perforated Appendix, Any Age (expressed as percentage) | 0.25% | 0.23% | 0.22% | 0.31% | | |
| Diabetes Long Term Complication, Age 18+ | 0.29 | 0.31 | 0.36 | 0.38 | | |
| Pediatric Asthma, Age 0-17 | 0.39 | 0.37 | 0.13 | 0.16 | -59% | -42% |
| COPD, Age 18+ | 0.37 | 0.59 | 0.53 | 0.44 | | |
| Pediatric Gastroenteritis, Age 0-17 | 0.08 | 0.16 | 0.12 | 0.10 | | |
| Hypertension, Age 18+ | 0.04 | 0.02 | 0.08 | 0.07 | | |
| Congestive Heart Failure, Age 18+ | 0.36 | 0.44 | 0.50 | 0.39 | | |
| Low Birth Weight (expressed as percentage) | 0.38% | 0.50% | 0.48% | 0.43% | | |
| Dehydration, Any Age | 0.63 | 0.59 | 0.58 | 0.62 | | |
| Bacterial Pneumonia, Any Age | 0.95 | 0.77 | 0.94 | 0.93 | | |
| Urinary Tract Infection, Any Age | 0.44 | 0.34 | 0.22 | 0.44 | | |
| Angina, Age 18+ | 0.65 | 0.70 | 0.44 | 0.29 | -55% | -67.4% |
| Diabetes Uncontrolled, Age 18+ | 0.10 | 0.04 | 0.05 | 0.02 | -80% | -51.9% |
| Adult Asthma, Age 18+ | 0.38 | 0.31 | 0.43 | 0.35 | | |
| Lower Extremity Amputation, Age 18+ | 0.10 | 0.12 | 0.16 | 0.09 | | |

* Maine data on total population from the Maine Health Database of all hospital discharges in the State of Maine, 2001.

## SUMMARY AND CONCLUSIONS

### Summary

The detailed claims data of the Maine Health Management Coalition provides a unique opportunity to examine factors contributing to the growth in health spending in Maine. This study analyzed the experience of employer benefit plans that were consistently part of the MHMC between1995 and 2001. While the experience of this group of approximately 106,000 persons cannot be generalized to the larger population of privately insured persons in Maine, it provides insights into trends in cost and utilization that will be helpful to policymakers and other parties interested in health system improvement in Maine.

Where possible, the national experience of the privately insured population has been used as a benchmark against which to compare MHMC trends.

#### *Aggregate Growth in Per Capita Costs*

In the six years of the study, the per member per month (PMPM) cost for health services exclusive of pharmaceuticals rose from $128 to $172, or 34 percent on an age-adjusted basis. Because the mix of services analyzed in this report differs from national analyses due to our exclusion of pharmaceutical costs, there is no national benchmark against which to compare this aggregate figure. However, service specific trends lend themselves to a comparative analysis.

#### *Hospital Outpatient Costs*

Among the most striking findings of this analysis is the contribution of hospital outpatient costs to overall cost growth rates. Outpatient costs per person nearly doubled during the six years of the study, comprising less than 23 percent of health service costs in the first year of the study and increasing to 29 percent by 2001 (exclusive of pharmaceutical costs). Costs exceeded the national experience of "loosely managed" health plans both on a per capita basis and in the rate of increase. Study population costs were already higher than the national average in 1997 – when MHMC costs were $34 PMPM compared to $24 nationally. In the next six years the disparity grew to $21 PMPM – when MHMC costs were $57 PMPM.

A review of changes in utilization for specific services and procedures provides some insight into factors that have contributed to outpatient cost increases. For example, CT scans and MRI use increased by 143 percent and 149 percent, respectively.

The very substantial increases in imaging, tests, and procedures experienced by the MHMC study population may be driven in part by increased capacity in the State both

within hospital outpatient departments and in free-standing facilities. A published report indicates, for example, that the number of free-standing MRI units within Maine increased 1200 percent between 1999 and 2001 – more than any other State, and that current capacity relative to population density in Maine is more than double that of demographically similar states and about eight times the capacity in New Hampshire.

### *Hospital Inpatient Costs*

Inpatient hospital use, as measured by total inpatient days per 1000 covered lives, declined by 6 percent between 1995 and 2001. Overall, the rate of hospital discharges dropped while average length of stay rose – as did the level of acuity of the patients. Changes in utilization, thus, were very modest. Average cost per discharge, by contrast, rose 40 percent in the study period. Many factors may contribute to changes in average cost per hospital discharge: changes in the mix of patients and the severity of their illnesses, the introduction of new technologies, the upgrading of existing technologies, and general inflation. While it is not possible to discern the contribution of each of these factors to the change in costs experienced by the MHMC population, the case-mix adjustment provides a rough measure of the contribution of patient acuity to the rate of change. Based on this rough measure, change in patient mix accounted for roughly two-thirds of the overall increase. Increased acuity accounted for a 22 percent increase in cost per discharge. An additional 18 percent points in increased cost per discharge cannot be accounted for by case-mix factors. In addition, changes in patient acuity and non-patient driven cost increases did not occur simultaneously. In the first few years covered by the study, all increase in costs per discharge could be attributed to increased patient acuity. However, in the time period where there was the largest growth in cost per discharge – 1999 through 2001 – there was very little change in patient acuity. Non-case-mix factors accounted for all of the 17 percent increase.

On a per capita basis, the inpatient hospital cost trend for the MHMC study population was markedly different from the national privately insured population experience. Nationally, per capita costs dropped between 1995 and 1998 and, -- although they began to rise quickly in the late '90s – by 2001, per capita costs were only 5 percent above the 1995 level. In Maine, for the privately insured population studied, costs rose, cumulatively, 20 percent between 1995 and 2001.

### *Physician Visits*

The MHMC population experienced increases in both physician service utilization and cost per visit. Utilization rates and costs rose faster in Maine than for privately

insured persons across the nation, as a whole. The net effect of these increases was an 69 percent increase in per capita costs for physician visits across the study period. This increase compares with a 39 percent per capita increase for privately insured persons, nationwide.

## Discussion

National data tell us that across all payers and populations, Maine's per capita health care spending rose faster than any other state in the nation during the 1990s. This study, looking in some depth at a privately insured group within Maine, provides an indication of some of the factors driving these increases. These analyses point to different dynamics in different sectors. Inpatient hospital care has seen modest changes in utilization, but increases in cost-per-discharge that are substantially above national experience. Physician services saw increases in utilization and cost that exceeded national benchmarks. However, the increase in utilization brings the physician visit rate to a level that is still below national utilization rates for similar populations and to a level that is generally considered appropriate for a population with adequate access to care. For outpatient services, we do not have national benchmarks to compare changes in aggregate utilization. We know that specific services, frequently provided on an outpatient basis (both in hospitals and in free-standing facilities), saw dramatic increases in utilization. Whether utilization was the sole driver of aggregate per capita increases, or whether changes in price contributed to the doubling of per capita outpatient cost is a question that cannot be answered by this study. We know that the cumulative percent increase in per capita spending for these services was substantially greater for the MHMC population than for the national population of privately insured persons.

Several findings stand out as worthy of further investigation. The rate of increase in imaging services, particularly CT scans and MRIs raises important questions. It is unlikely that a major change in disease or trauma could explain an increase of more than 100 percent in utilization, particularly in a study population drawn from the same group of businesses throughout the period of observation. More likely, growth in capacity has triggered the changes. The growth of advanced imaging units in Maine has far outstripped other states and resulted in a level of capacity far above the norm for most of the country, including other rural states. An investigation into the appropriateness of current levels of use seems merited.

Second, the increase in cost per discharge for inpatient care, unassociated with changes in patient acuity, in the period between 1998 and 2001 merits further review. Undoubtedly, some component of this increase can be attributed to cost-shifting to private payers to compensate for the relatively high proportion of Medicare and

Medicaid patients that Maine hospitals serve and discounts taken by these programs. However, Maine per capita costs rose 20 percent in a six year period when the aggregate increase for private patients nationwide was 5 percent. It seems likely that factors beyond Medicare and Medicaid payments contributed to this disparity and a greater understanding of these factors would be a benefit to Maine policymakers and payers in Maine.

This study is an exploratory analysis of the health service utilization and costs of an insured population in Maine. The population studied is self-selected and no conclusions can be drawn from this analysis regarding the average experience across the state as a whole. We hope that trends documented in this study and the comparisons with national benchmark experience will contribute to the ongoing effort in Maine to improve the quality and efficiency of health care services and will point the way to additional analyses that inform all stakeholders on the characteristics and dynamics of the local health care environment.

# BIBLIOGRAPHY

Baker L, Birnbaum H, Geppert J, et al. (2003). *Final Report on the Relationship Between Technology Availability and Health Care Spending.* Prepared for Blue Cross and Blue Shield Association, Chicago, IL by Analysis Group, Inc., Boston, MA.

Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Statistics Group (2003). *Health Care Financing Review Statistical Supplement*.

Cunningham P and May J (2003). *Insured Americans Drive Surge in Emergency Department Visits*. Center for studying Health System Change Issue Brief No. 70.

Kozak LJ, Owings MF, Hall MJ (2004). *National Hospital Discharge Survey: 2001 annual summary with detailed diagnosis and procedure data.* National Center for Health Statistics. Vital Health Stat 13(156).

Martin, Whittle, Levit, et al. (2002). Health Care Spending During 1991 – 1998: A Fifity-State Review. *Health Affairs* 21(4).

National Association of State Budget Officers and The Reforming State Group (2003). *2000 – 2001 State Health Care Expenditure Report,* Appendix Table A. Milbank Memorial Fund. Available at http://www.milbank.org/reports/2000shcer/index.html.

Pyenson BS, Zenner PA, Chye P (2002). *Silver Bullets for Outpatient Cost Increases?* Milliman USA Research Report.

Strunk B, Ginsburg P, and Cookson J (2005). Tracking Health Care Costs: Declining Growth Trend Pauses in 2004. *Health Affairs – Web Exclusive,* 21 June.